



2016 Vermont Business Sector Market Characterization and Assessment Study

APPENDIX B

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Introduction

The 2016 Vermont Business Sector Market Characterization and Assessment study provides baseline energy efficiency data for Vermont's business sector facilities as of 2016, largely through primary data collection. The main body of this final report provides summary figures and tables that summarize Existing Buildings results by 10 facility types. To facilitate comparisons with the 2011 report, this Appendix B provides figures and tables that summarize results using the same four facilities types used in the 2011 report.



Existing Buildings Figures and Tables with Four Categories

Figure 4. Facility Ownership (N=192) [2011 Fig. 3-4]

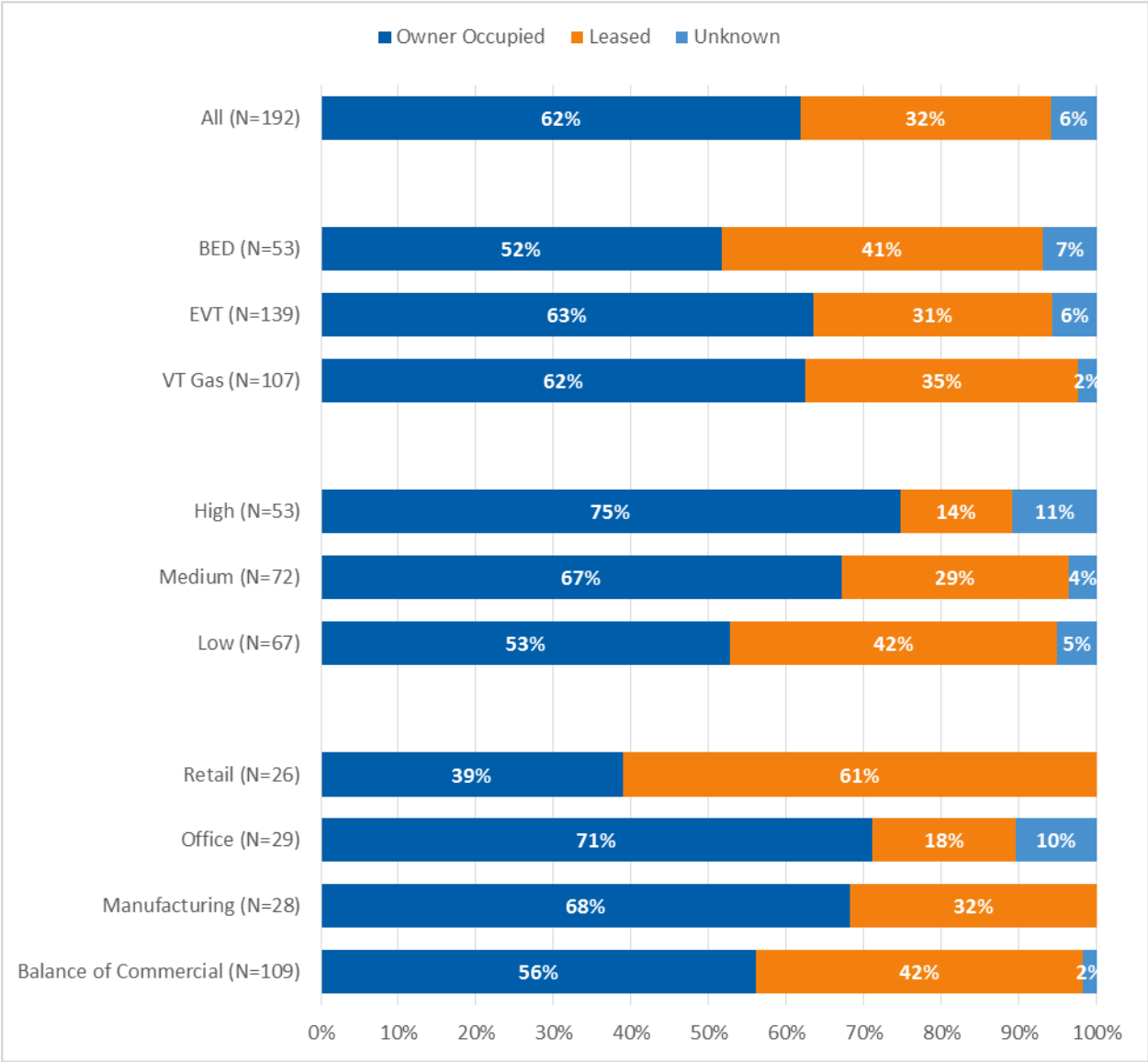


Table 9. Full-Time Equivalent Employees (N=192) [2011 Table 3-2]

Category	Mean FTEs	Median FTEs	Sites Where Unknown
All (N=192)	12	4	6
BED (N=53)	39	7	1
EVT (N=139)	7	4	5
VT Gas (N=107)	18	4	2
High (N=53)	34	13	5
Medium (N=72)	9	7	0
Low (N=67)	4	4	1
Retail (N=26)	11	4	0
Office (N=29)	13	4	2
Manufacturing (N=28)	13	6	1
Balance of Commercial (N=109)	9	4	3

Figure 6. Mean Open Hours Per Week by Category (N=186) [2011 Fig. 3-6]

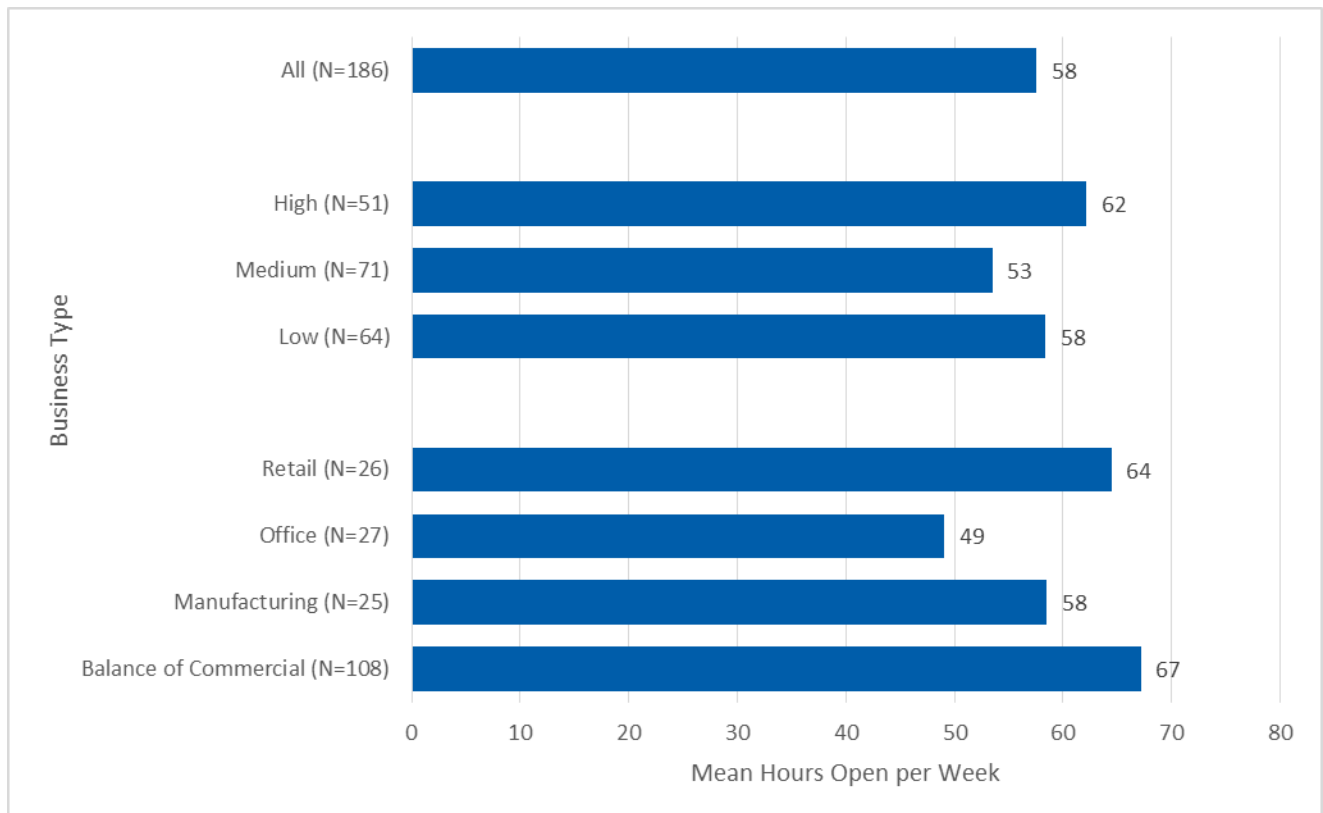




Figure 10. Distribution of Facility Types for Cases with No Wall Insulation (N=136) [2011 Fig. 3-10]

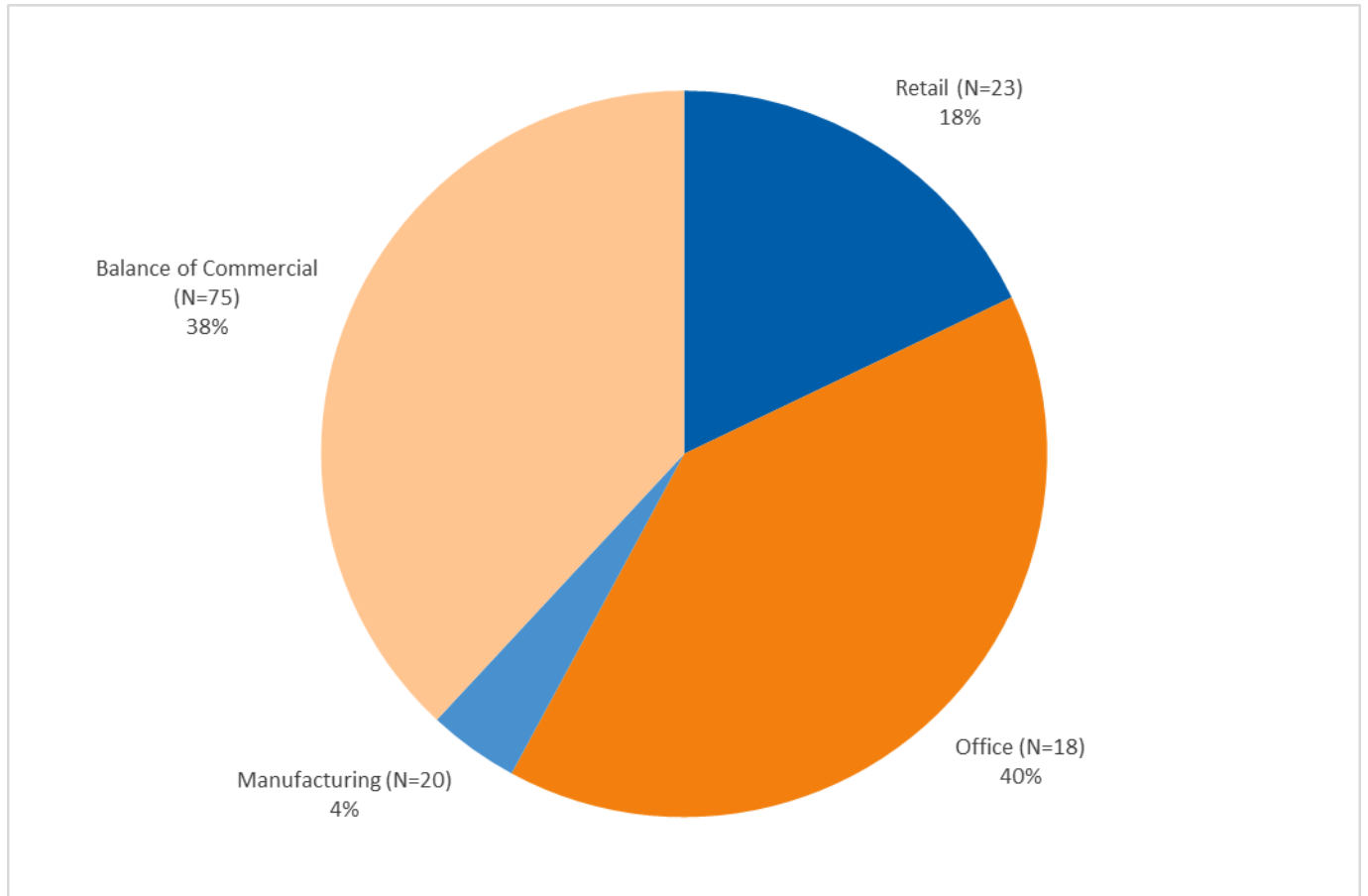


Figure 13. Wall Insulation R-Values by Facility Type (N=146) [2011 Fig. 3-13]

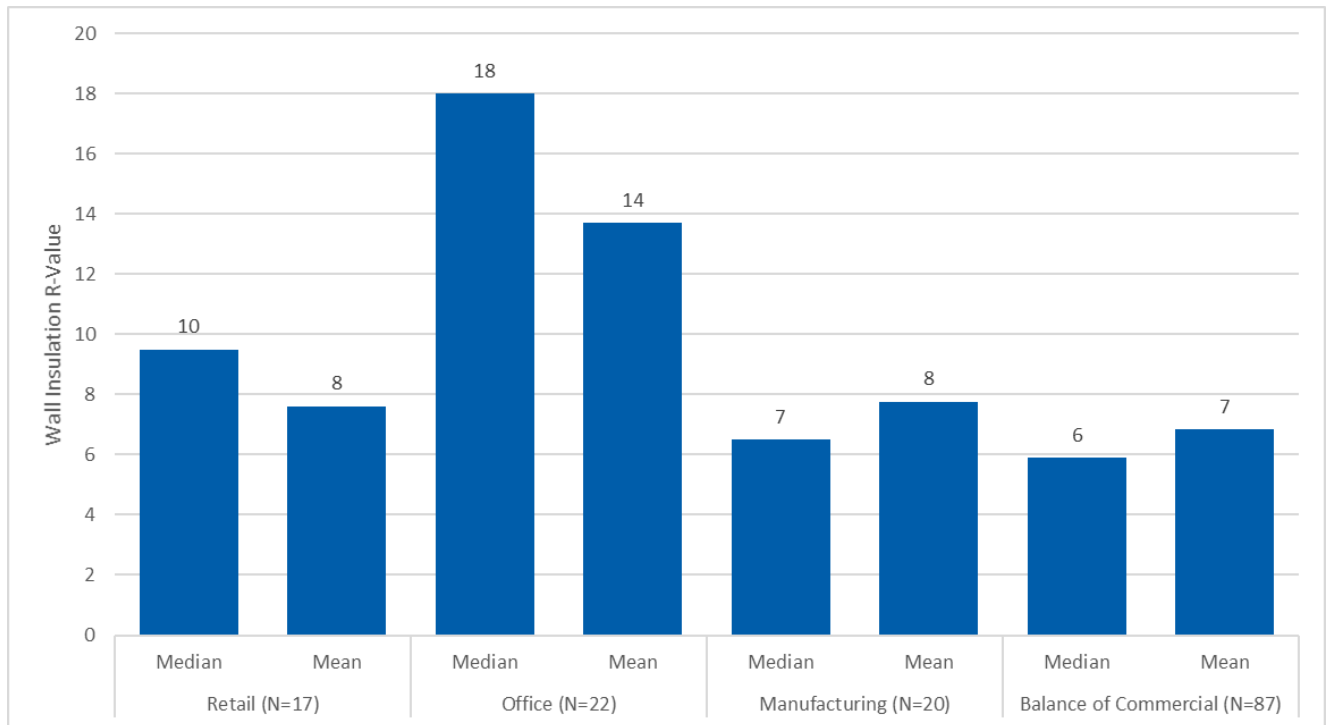
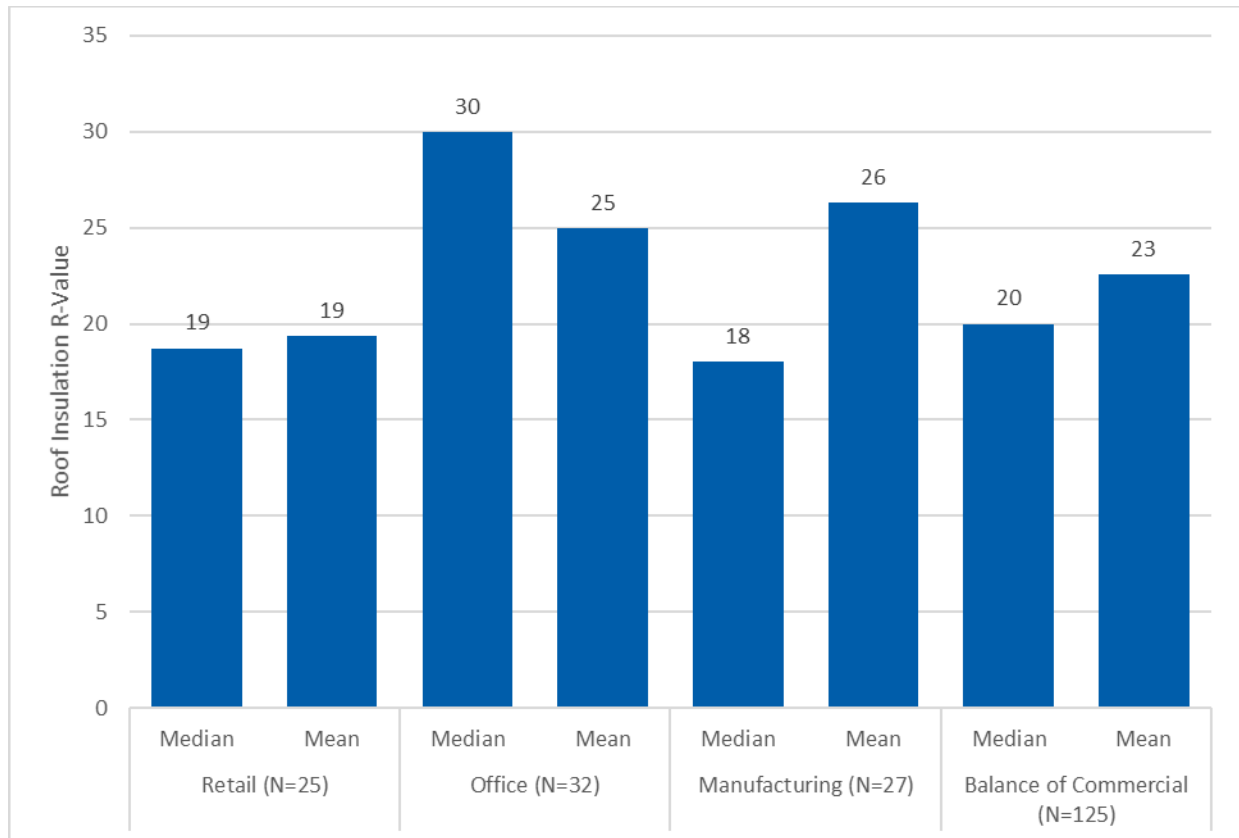




Figure 18. Roof Insulation R-Values by Facility Type (N=209) [2011 Fig. 3-17]



table

Figure 28. Distribution of Indoor Lamps by Facility Types (N=189) [2011 Fig. 3-27]

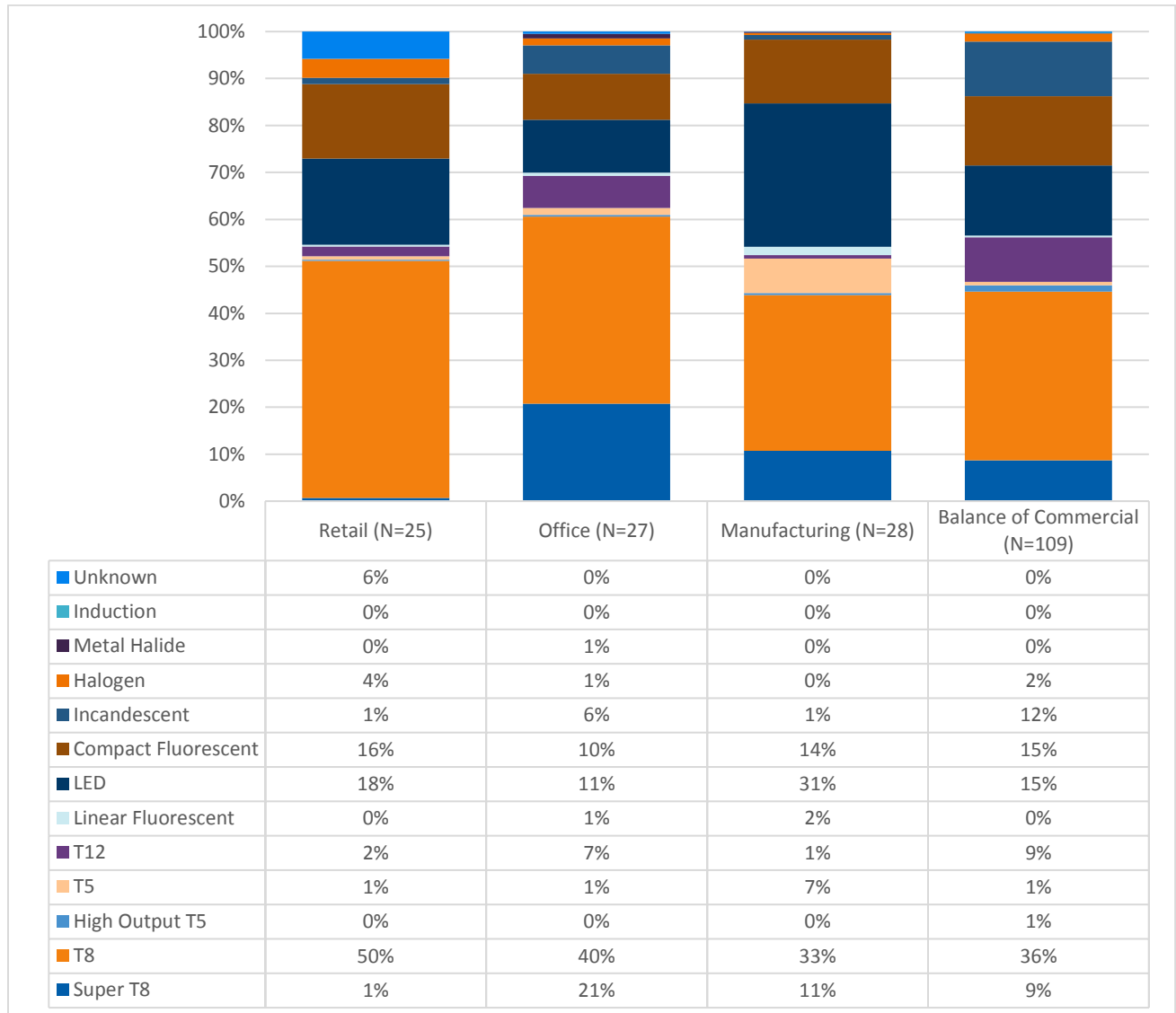




Table 11. Distribution of Linear Fluorescent Lamps [2011 Table 3-5]

Category	Super T8	T8	High Output T5	T5	T12	Linear Fluorescent
All (N=189)	20%	66%	1%	2%	10%	1%
EEB						
BED (N=53)	6%	79%	3%	3%	9%	1%
EVT (N=136)	25%	62%	0%	2%	10%	1%
VT Gas (N=106)	24%	59%	1%	4%	11%	1%
Facility Size						
High (N=51)	13%	75%	2%	3%	7%	1%
Medium (N=72)	41%	49%	0%	1%	9%	0%
Low (N=66)	6%	73%	1%	4%	15%	1%
Facility Type						
Retail (N=25)	1%	92%	0%	2%	4%	1%
Office (N=27)	27%	60%	0%	2%	9%	1%
Manufacturing (N=28)	20%	61%	1%	14%	1%	3%
Balance of Commercial (N=109)	15%	64%	2%	1%	17%	1%

Table 12. Penetration of Indoor Lighting Control Types [2011 Table 3-6]

Category	Manual Switch	Motion / Occupancy Sensor	Always On (24/7)	Timeclock / EMS	Dimmer	Daylighting Controls
All (N=189)	100%	31%	0%	4%	4%	1%
EEU						
BED (N=53)	100%	71%	0%	15%	0%	0%
EVT (N=136)	100%	21%	0%	1%	5%	2%
VT Gas (N=106)	100%	35%	0%	7%	4%	0%
Facility Size						
High (N=51)	100%	56%	0%	10%	4%	1%
Medium (N=72)	100%	14%	0%	0%	0%	0%
Low (N=66)	100%	15%	0%	0%	8%	4%
Facility Type						
Retail (N=25)	100%	22%	0%	0%	3%	0%
Office (N=27)	100%	33%	0%	3%	0%	2%
Manufacturing (N=28)	100%	42%	0%	17%	6%	0%
Balance of Commercial (N=109)	100%	30%	0%	4%	11%	1%



Figure 38. Distribution of Outdoor Lamp Types by Facility Type (N=189) [2011 Fig. 3-34]

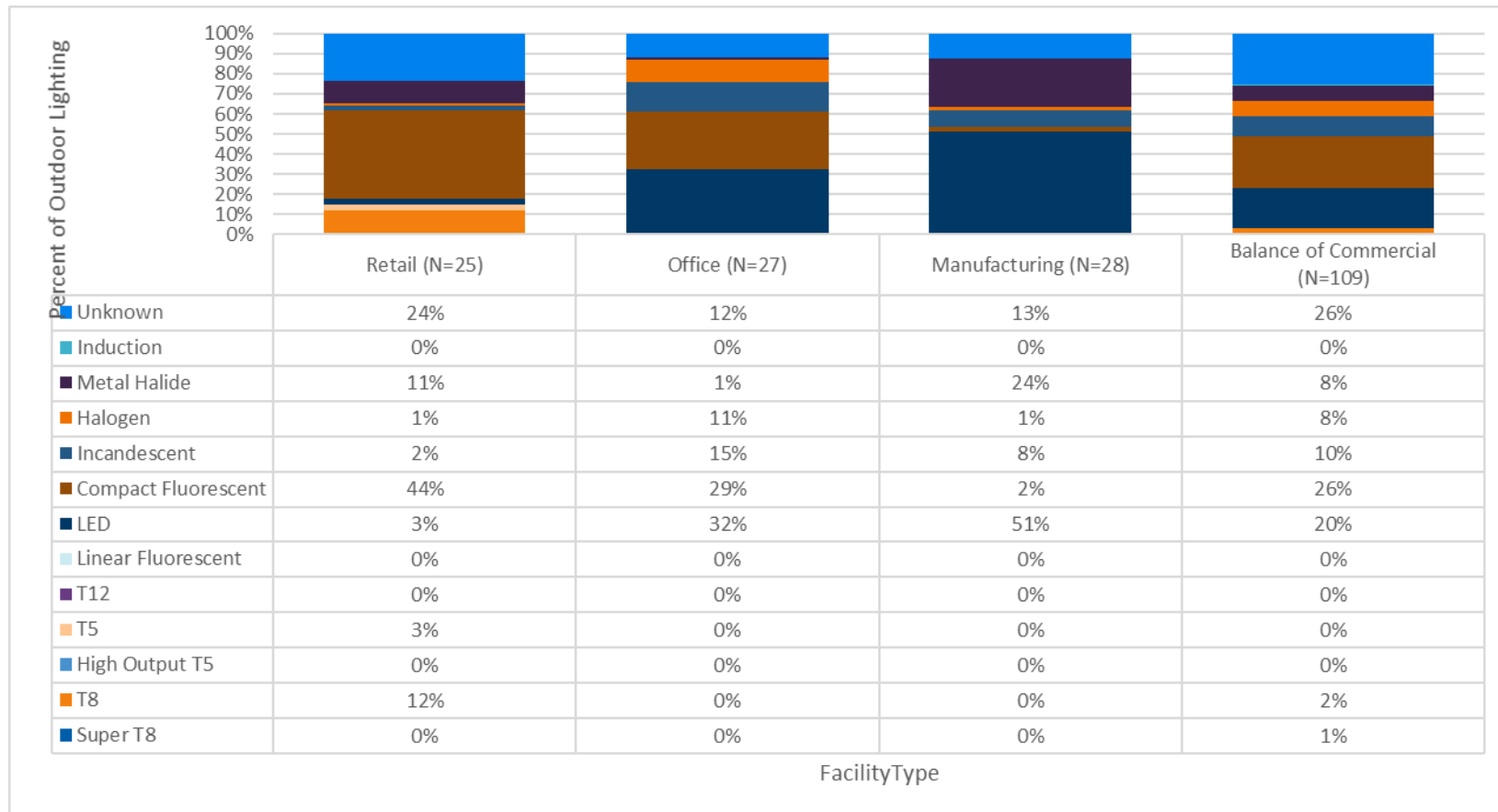


Table 14. Saturation of Outdoor Lighting Control Types by Facility Type [2011 Table 3-8 (2)]

Category	Manual Switch	Motion / Occupany Sensor	Always On (24/7)	Timeclock / EMS	Dimmer	Daylighting Controls	No Space Control	Not Identified
All (N=189)	43%	4%	0%	18%	0%	34%	1%	5%
EEU								
BED (N=53)	40%	1%	0%	23%	0%	19%	0%	18%
EVT (N=136)	43%	5%	0%	17%	0%	35%	1%	4%
VT Gas (N=106)	43%	2%	0%	19%	0%	33%	2%	3%
Facility Size								
High (N=51)	0%	0%	0%	17%	0%	77%	0%	5%
Medium (N=72)	47%	0%	0%	22%	0%	21%	0%	10%
Low (N=66)	67%	11%	0%	14%	0%	16%	2%	0%
Facility Type								
Retail (N=25)	87%	9%	0%	12%	0%	0%	0%	2%
Office (N=27)	48%	4%	0%	8%	0%	44%	0%	0%
Manufacturing (N=28)	14%	1%	0%	23%	0%	63%	1%	0%
Balance of Commercial (N=109)	28%	4%	0%	27%	0%	33%	2%	10%



Figure 44. Average Age of Single-Zone HVAC Systems by Facility Type (N=500) [2011 Fig. 3-40]

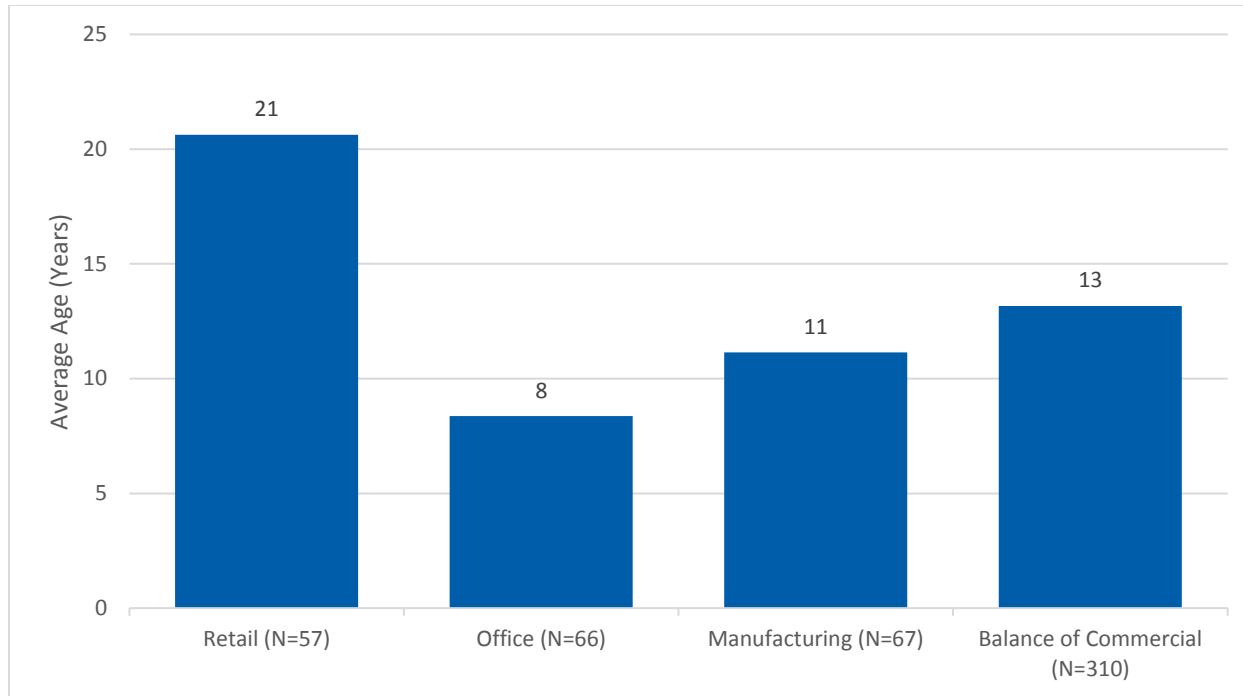


Figure 48. Boiler Delivery Systems by Facility Type (N=165) [2011 Fig. 3-47]

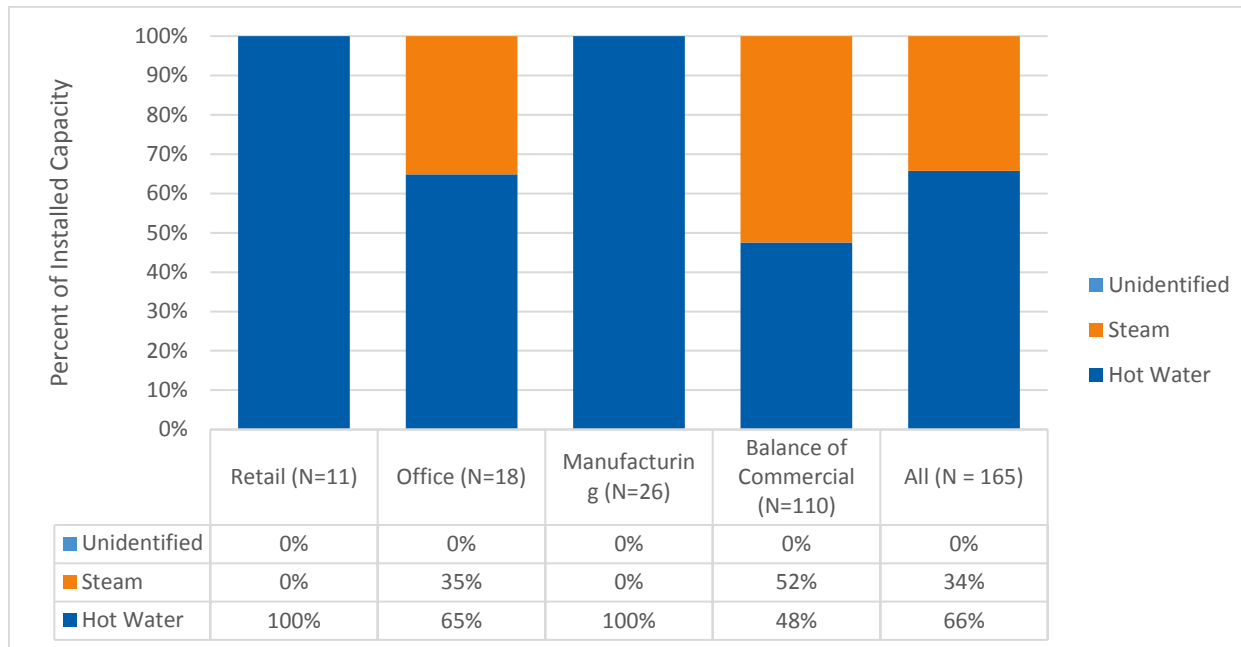




Figure 53. Saturation of Cooling System Types by Facility Type (N=362) [2011 Fig. 3-52]

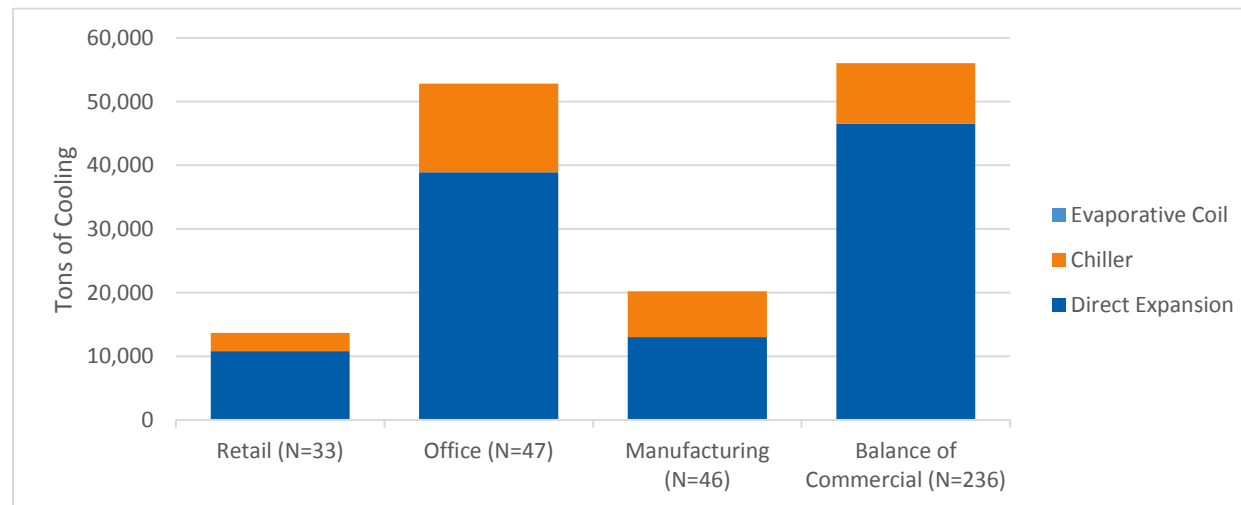


Figure 54. Saturation of Variable Speed Drive Controls for Chillers [2011 Fig. 3-53]

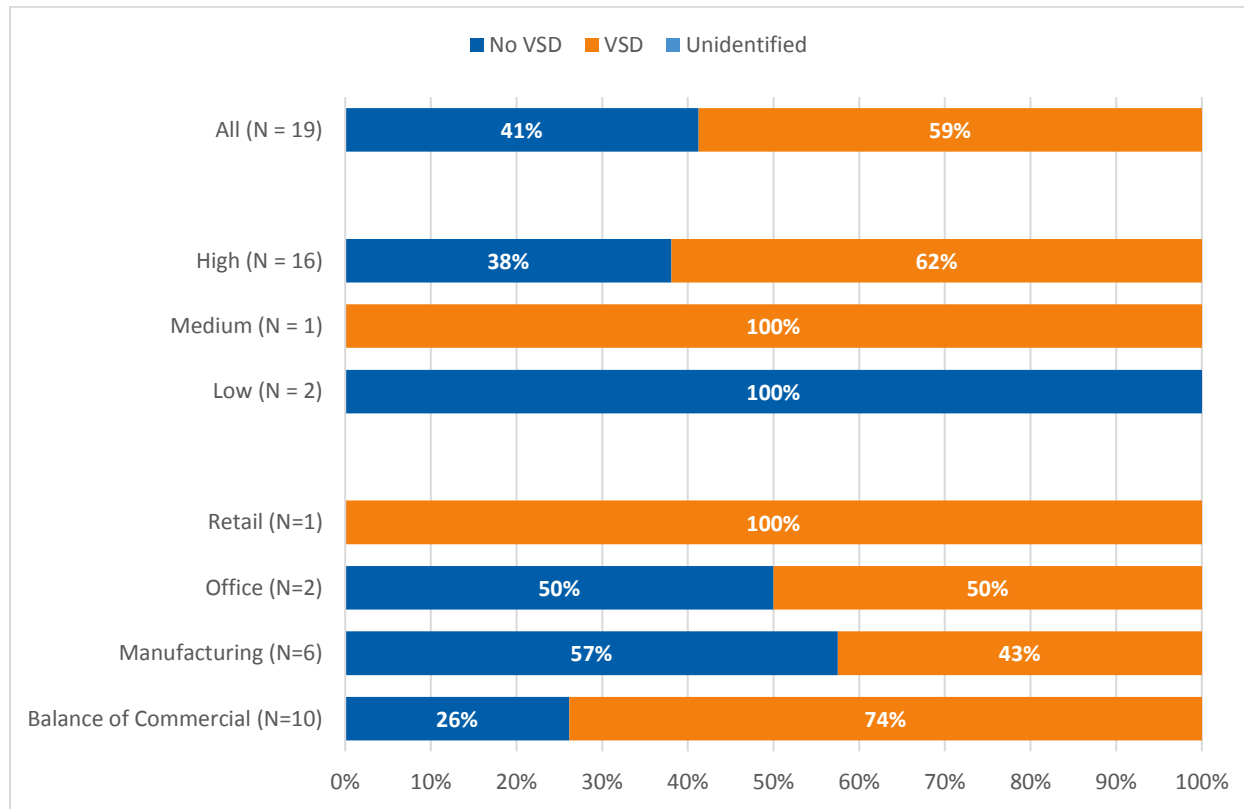




Figure 63. Saturation of HVAC System Control Types by Facility Type (N=1,103) [2011 Fig. 3-58]

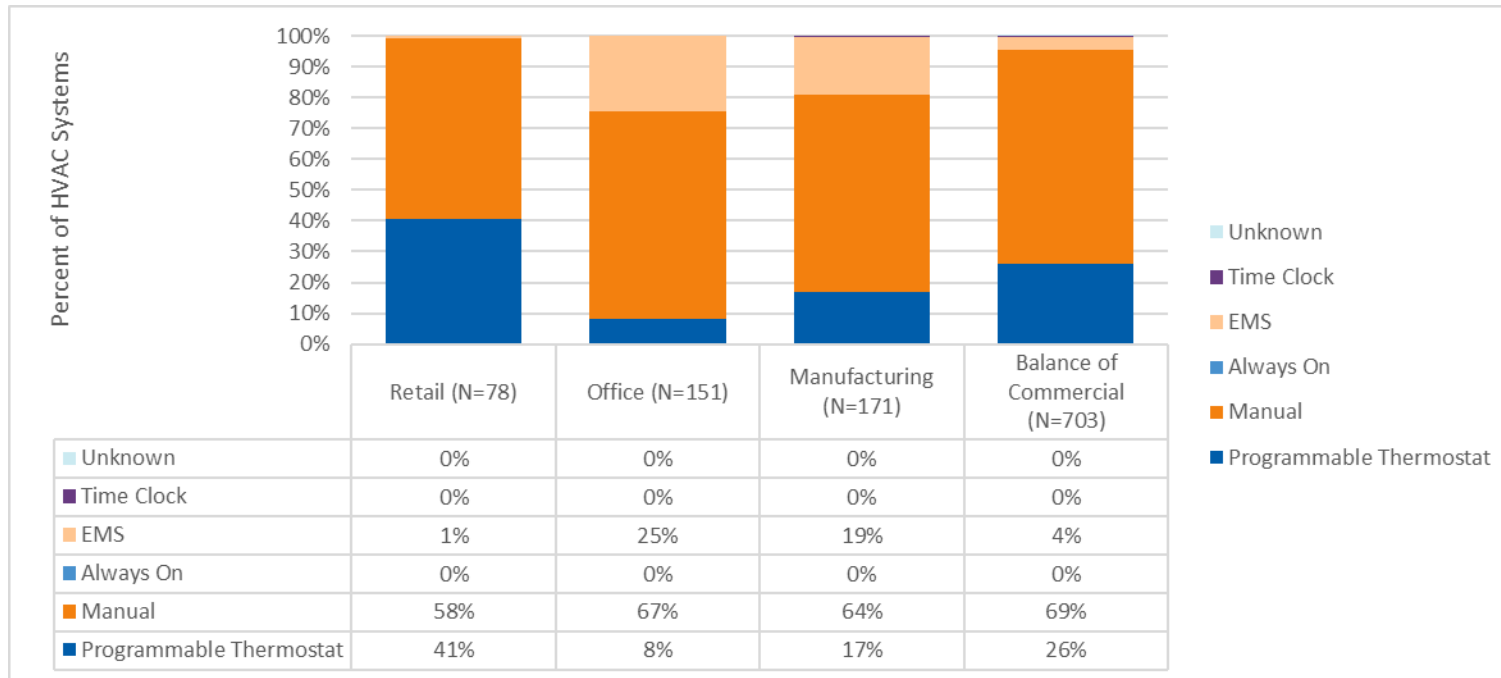


Figure 67. Saturation of Water Heating Equipment Types by Facility Type [2011 Fig. 3-62]

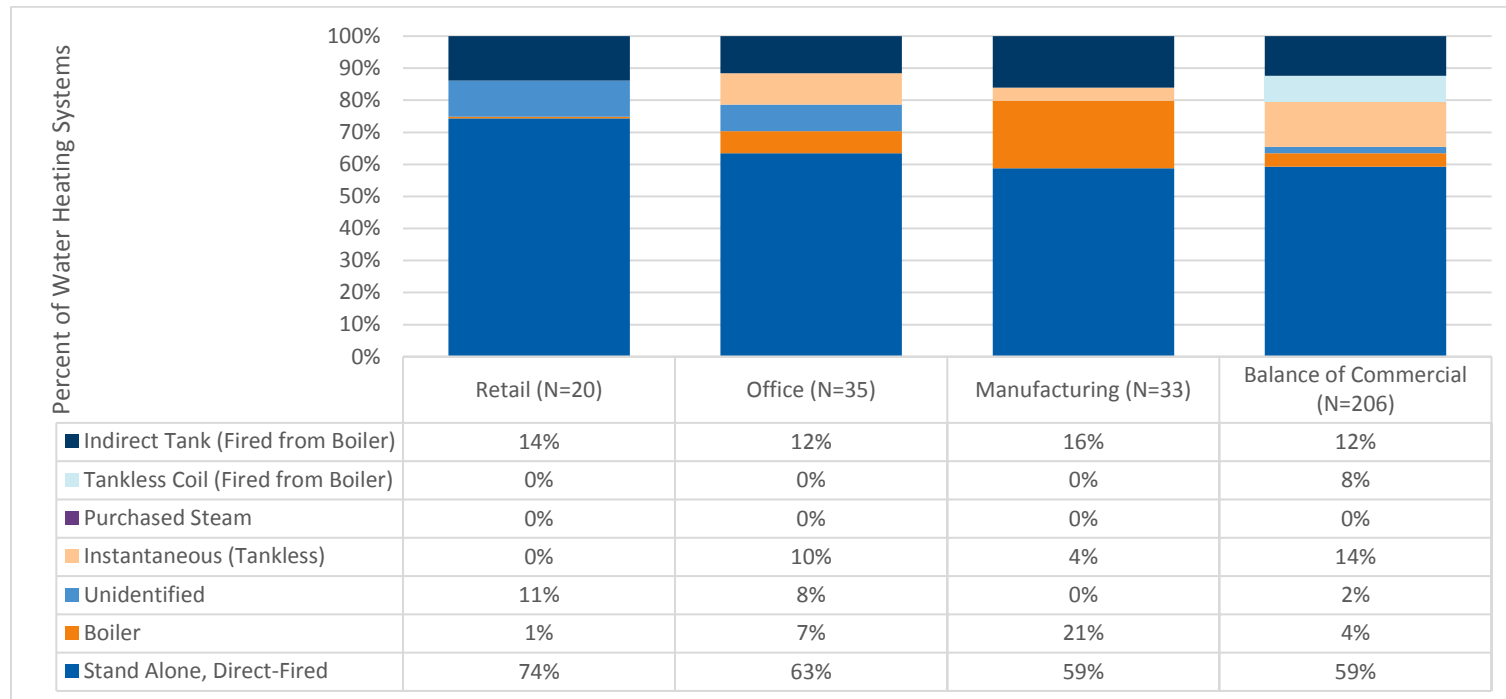




Figure 70. Water Heating Temperature Setting by Facility Type [2011 Fig. 3-65]

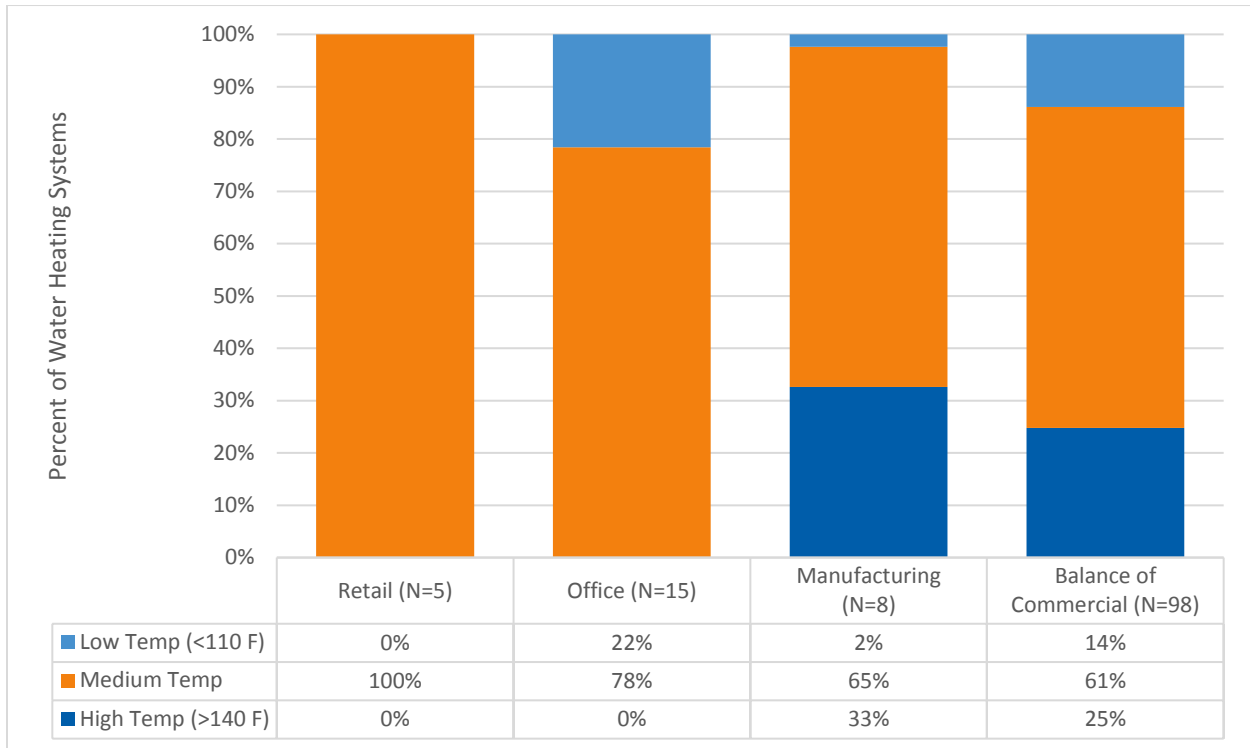


Figure 75. Saturation of Non-Commercial ENERGY STAR Refrigerators and Freezers by Facility Type
[2011 Fig. 3-70]

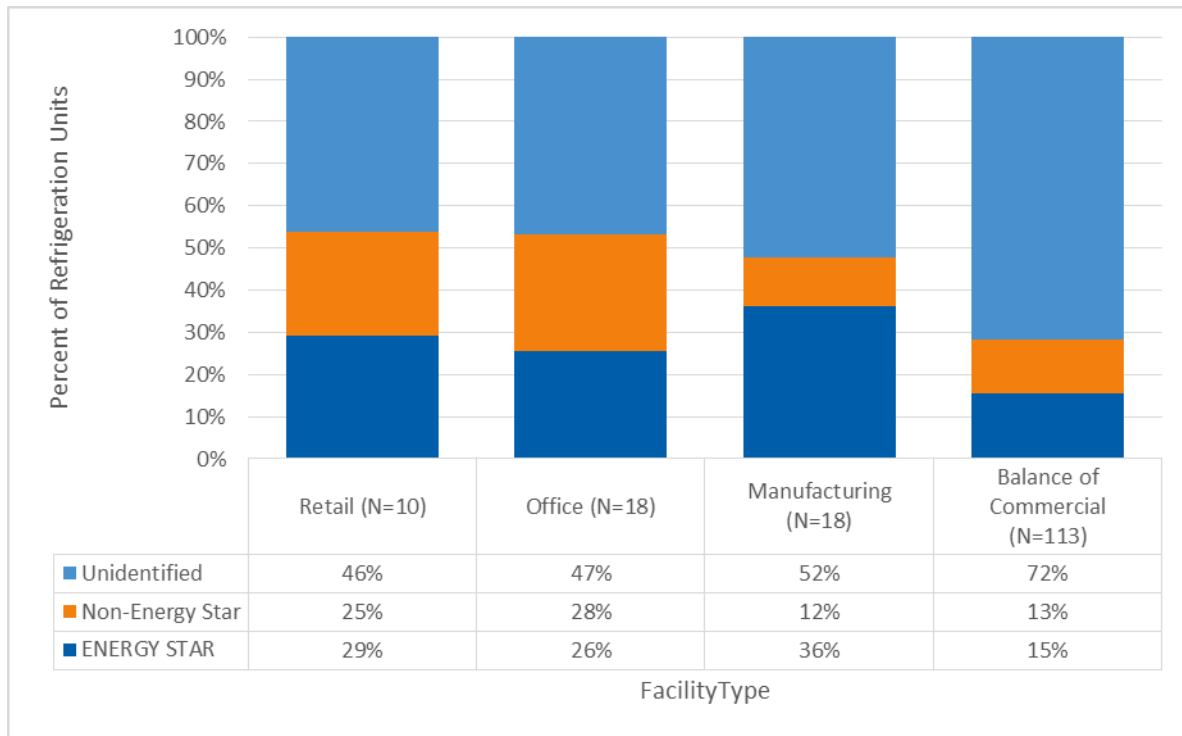




Table 22. Distribution of Air Compressors by Facility Type [2011 Fig. 3-17]

Air Compressor Type	All (N = 29)	Building Type				Size Strata			EEU	
		Retail (N=1)	Office (N=2)	Manufacturing (N=7)	Balance of Commercial (N=19)	High (N = 21)	Medium (N = 4)	Low (N = 4)	BED (N = 1)	EVT (N = 28)
Reciprocating (Single-stage, single-acting)	24%	0%	0%	66%	3%	47%	0%	17%	0%	16%
Reciprocating (Single-stage, double-acting)	21%	100%	0%	17%	5%	7%	0%	66%	0%	16%
Reciprocating (Two-stage, double-acting)	24%	0%	0%	0%	14%	18%	0%	0%	0%	4%
Reciprocating (Two-stage, single-acting)	10%	0%	30%	0%	5%	7%	21%	0%	100%	2%
Rotary Screw (Two-stage)	14%	0%	70%	17%	16%	22%	50%	17%	0%	43%
Centrifugal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Unknown	7%	0%	0%	0%	57%	0%	28%	0%	0%	19%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 24. Air Compressor Hours of Use per Week by Bin and Facility Type [2011 Fig. 3-18]

Hours	All (N = 29)	Building Type				Size Strata			EEU	
		Retail (N=1)	Office (N=2)	Manufacturing (N=7)	Balance of Commercial (N=19)	High (N = 21)	Medium (N = 4)	Low (N = 4)	BED (N = 1)	EVT (N = 21)
<10	34%	0%	30%	17%	64%	25%	43%	17%	100%	25%
11 - 49	21%	100%	0%	34%	17%	22%	0%	83%	0%	24%
50 - 99	37%	0%	70%	37%	0%	33%	50%	0%	0%	42%
100 - 167	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
168	4%	0%	0%	0%	13%	0%	6%	0%	0%	4%
Unknown	4%	0%	0%	12%	7%	20%	0%	0%	0%	5%